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Analysis of Personalised Content in E-commerce

Analýza personalizovaného obsahu v oblasti E-commerce

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Description:

1. Introduction
2. E-commerce literature review
3. Methodology of collected data
4. Research results and analysis of situation in the Czech Republic
5. Discussion and recommendation for the next development of E-commerce personalization
6. Conclusion

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Prohlašuji, že jsem celou práci, včetně všech příloh, vypracoval samostatně.

V Huddersfieldu, 29.6.2014 .....

Michal Dědek

ABSTRACT

The way in how the World-Wide-Web is used has significantly changed since the beginning of electronic commerce revolution. Modern technologies provided powerful instrument for implementation of one-to-one marketing into practice with exceptional accuracy for reasonable price. The aim of this study is to describe main aspects of personalisation for e-commerce in the Czech Republic. Firstly, the role of e-commerce is described as an enabler of development for personalised content delivery; secondly, major techniques of personalisation are defined. In the research part, the results from the internet-mediated survey are analysed. The major part consists of perception about personalisation from Czech e-commerce customers' point of view. Moreover, statistical methods were used for hypothesis testing. It was found that personalisation is of higher importance for maintaining existing customers through building long-term relationship, rather than instrument efficient for acquiring new customers. In addition, positive relationship between importance customers give to personalisation and valuing it as sufficient reason for tracking shopping process was found. It should, however, be highlighted that this paper should be due to relatively small size of sample and other limitations be taken cautiously.

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1 INTRODUCTION

Andrew Groove (1999), founder and chairman of Intel corporation, assumed that all attention given to Internet companies during the web revolution is inadequate, because

> *"As we talk about Internet companies, in five years' time there won't be any Internet companies. All companies will be Internet companies or they will simply be dead."*

The generally known dot.com revolution between 1995 and 2001 introduced promises of Information and communication technologies (ICT) showing a probable market entrance with disruptive effects on how business was earlier conducted (Reynolds, 2010). Rapid expansion of e-business performed in first six years with experienced growth over 100% has however demonstrated just fractional beginning of new economy era. In this point Laudon and Traver (2013) believe Groove's predictions will be fulfilled no later than by 2050 and Groove himself has strengthened his believes even more.

In the Czech Republic, e-commerce industry has developed in many aspects over past few years. In the year 2013, total amount of e-shops was calculated to 35 000, number of citizens with access to internet exceeded 6.5 million users and e-commerce turnabout reached 57.9 billion Czech crowns (approx. £1.74 billion) (shoptet.cz, 2013).

Since the creation of electronic commerce, many things have changed and whole industry has matured. Companies need to seek for methods that would give them further competitive advantages in highly digitalized world because conducting e-business is no longer certain remedy for success. One of such options is implementation of personalised information delivery into company's strategy as an approach for conducting business.

It can be claimed that Czech e-commerce has developed but compared to other markets two main gaps could be presented. The first is a gap of possibly higher level of personalisation implemented into Czech e-commerce websites. Although personalisation in e-commerce has become one of the major strategies for e-commerce leaders in western e-business environment, the level of its implementation in the Czech Republic tends to be minimal. Having considered four major Czech online retailers – Mall.cz, Alza.cz, Kasa.cz and Aukro.cz, the offered options of implemented personalisation are almost insignificant (Kupka, 2010).

Second gap is represented by little research about Czech e-commerce in general and almost non-existent studies about personalisation in the market. It is true that Association for Czech E-commerce (APEK) started with research about Czech e-commerce in the year 2010, yet mentioned surveys are not accessible without paying admission fee. In addition, the survey consists of general findings about e-commerce and is not primarily focused on personalised content.

Hence, the survey on the perception of personalised content in e-commerce in the Czech Republic was conducted in order to answer the aim of the study. This is to analyse perception of personalisation by customers in the Czech e-commerce environment. In order to address this aim, following objectives were formed:

- To describe e-commerce as enabler for highly personalised online shopping experience and to describe methods used for personalisation
- To analyse Czech customer's perception of personalised content in e-commerce
- To identify customer's needs and expectations for personalisation in Czech e-commerce

2 LITERATURE REVIEW

This chapter is divided into two parts. The first part concerns with theoretical rationale of e-commerce and furthermore focuses on how significantly the internet changed the way of conducting traditional business. In addition it provides focus on logical development of personalisation as a part of internet strategy. Second part aims at personalisation itself with possible benefits and linked issues. It moreover considers recommender systems as an important part of personalised techniques.

2.1 E-commerce overview

2.1.1 Defining the term

E-commerce offers a wide range of possible definitions with one obvious quality and that is the relationship between internet connections and online transactions. Turban (2012) offers a simple summarization when he describes E-commerce as:

> *"the process of buying, selling, or exchanging products, services, or information via computer."*

Another explanation is that electronic commerce is

> *"a broad term describing business activities with associated technical data that are conducted electronically" (Currie, 2000).*

2.1.1.1 Types of e-commerce

As with traditional commerce, e-commerce can be distinguished by the nature of the market relationship, in other words describing who serves who. The main perspectives considering the flow of transactions between an organization and its stakeholders are: business-to-business (B2B) as commerce among organisations, including not only former inter-business exchanges but also later developed models, such as matchmakers, online intermediaries or e-distributors. One of examples might be the largest B2B marketplace Alibaba that made $170 billion in sales in the year 2012, standing for more than Amazon and Ebay combined. Secondly, business-to-customer (B2C) where commercial organizations serve customers, and finally consumer-to-consumer (C2C) with the focus on commerce between individuals (Rajaraman, 2005). In the latter mentioned consumers themselves prepare a product with a description

for the market, they place it on the website for the purpose of selling or exchanging and rely on the provider to ensure the search-ability. The mostly common model is an auction site with limited time of listening placed item (Laudon & Traver, 2013). Despite the C2C character, those models still run on a business basis by a specific company and for profit. Furthermore, present types also additionally include combinations such as C2B or a governmental sphere (Chaffey, 2011).

In order to highlight importance and to better understand differences between existing types of transactions, it is vital to distinguish between E-commerce and E-business. Both terms are a certain reflection of 'electronic' state of traditional commerce and business, therefore their contrast is highlighted below. The adjective 'electronic' signifies usage of a disruptive innovation of electronic communication that induced companies to revise the way of conducting their business (Chaffey, 2011).

2.1.1.2 Commerce vs. business

Business and commerce are two terms with similar connotations yet a different advanced meaning. Since 'business' refers to all activities conducted by a firm in order to make profit, it might serve as a superior term to commerce, which is more concrete and generally recognised as an exchange of merchandise or services on a large scale between nations or individuals (Collin, 2006). Commerce is observably more related to trade activities in contrast to business that covers broader spectrum of activities.

2.1.1.3 E-commerce vs. E-business

In the context of electronic information exchange, the above mentioned analogy appears evident. In parallel, some authors consider e-commerce as merely a process of buying and selling goods and services online. Yet the contemporary business models prove oppositely broader possibilities in numerous business models. Therefore, Chaffey (2011) suggests that e-commerce is a compound of any electronically transferred transaction, either financial or non-financial, such as customer's responses and requests for further information between a company and any third party. Schneider (2006) sees e-commerce as a fragment of e-business with the difference in coverage of electronically mediated information, where e-commerce includes an exchange among organisation and external stakeholders. E-business supplements also internal transactions and processes whether it supports business process of an organisation. Discussions about capturing the differences have been held and certain

claim E-business an enlargement of e-commerce by organizational Information systems, in other words internal online processes (Turban, 2012). Alternatively, e-business might be an extension of E-commerce by servicing customers, information exchange among business partners, electronic transactions within a company. However, the discussed terms overlap in many aspects. The major role of technology highlights the definition by IBM, an American multinational technology corporation, which defines electronic business universally as "the transformation of key business processes through the use of internet technologies" (Chaffey, 2011).

2.1.2 E-commerce revolution

Having considered the exploration of E-commerce potential, the earlier unheard of became accessible. Internet as a breaking medium supported an entirely new philosophy of commerce previously tied by traditional business rules and it offered instruments for creating new business models profiting from rapid information transfers, more interactive prospects and automation of processes (Steward, Callaghan, & Rea, 1999). Despite the latter mentioned Schneider (2006)believes that E-commerce might be an assisting instrument for the augmentation of sales and the cost decrease, therefore internet as a medium brings possible advantage for enterprises. Porter (2001) by contrast affirms this is not the case as all businesses would adopt internet channel in the future thus competitive advantage would disappear. Hamilton (2007) opposed that new levels of competitiveness may occur with constantly existent reconfigurations, reprograming due to technology progress and improvements in artificial intelligence, therefore advantage reflects not the state of implementing e-commerce yet the level of its integration and advancement.

In addition, revenue sources seems to be more diversified: From analogies to traditional incomes such as direct sales and subscriptions, to more novel based issues as percentage profit from every transaction hosted, commission of matching buyers and sellers or commerce trading incomes on social networks (Korper & Ellis, 2001). The above mentioned represents merely a fraction of whole spectre allowed by e-commerce revolution.

2.1.2.1 Internet strategy

For more detailed analysis of how e-commerce changed the perspective of business evaluation, the Porter five forces analysis might be used to identify key findings. Having considered electronic commerce as one wide-range industry, the analysis helps to analyse

attractiveness by analysing five competitive forces (G. Johnson, Whittington, Scholes, Pyle, & Johnson, 2011). Although firstly, the traditional business evaluation focuses on the creation of value for customer and secondly internet (or any other disruptive technology) has not been adequate reason to change the rules of competition (even though it forced companies to rebuild their strategies in many aspects), the analysis should help to capture the impact of new economic companies on traditional ones (Karagiannopoulos, Georgopoulos, & Nikolopoulos, 2005). Porter (2001) himself, similarly as other authors, applied this concept in order to analyse effects of information technology on industry and individual organisations. Occurred findings in selected areas may serve as rich evidence for e-commerce revolution.

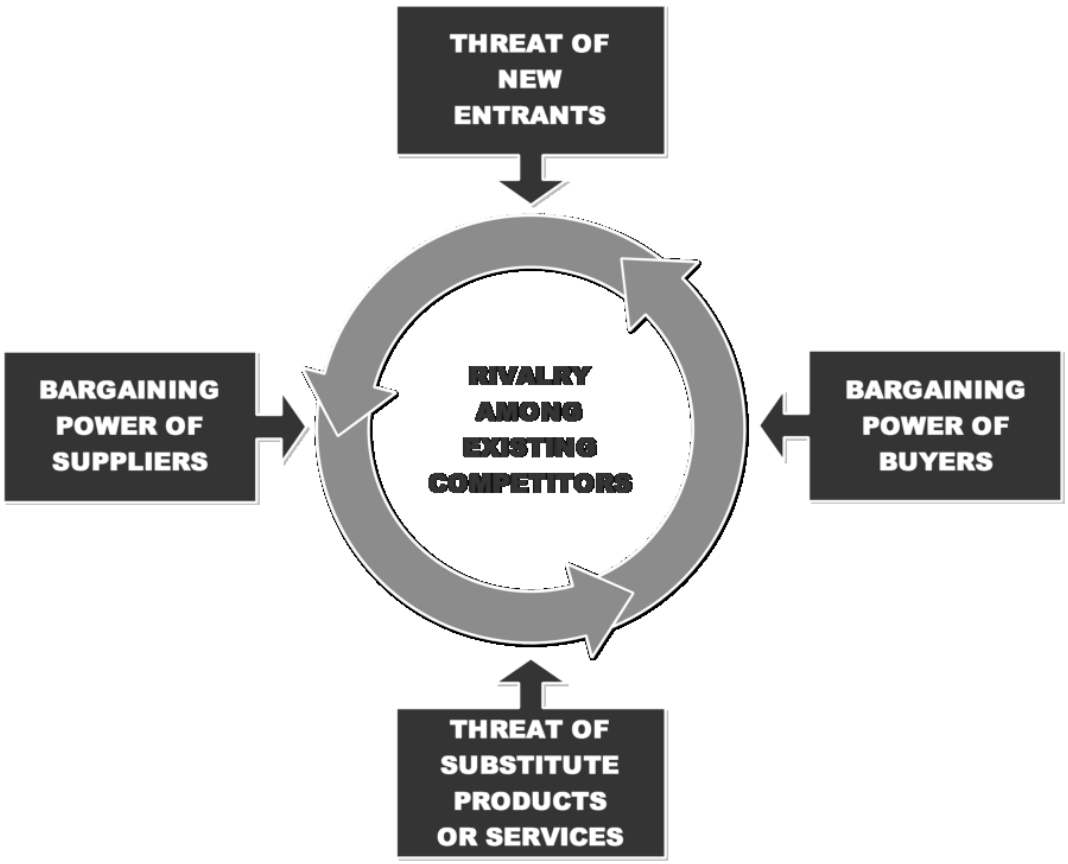


Figure 2.1 Five forces competition framework
(Source: Mason Myers Blog 2013)

Bargaining power of customers tends to be increased because of easier access to information about products and suppliers. Traditionally, the customer has an insignificant influence on a firm. However, in the context of e-commerce the balance is shifted. This is mostly because of faster access to information that made price comparison across different e-shops easier owing to price comparison search engines. Furthermore, there is also the sharing

of information when customers create discussion groups and collectively rate products and retailers (Steward et al., 1999). This fact however does not instantly prevent buyers from purchasing products not suitable for them mostly because of lack of consulting services they could receive in physical shops (Karagiannopoulos et al., 2005).

Porter (2001) claims barriers to entry decrease due to the moderation of need for sales force, access to existing channels or the decreasing need for physical assets. Further he maintains that any element internet helps to reduce or make easier to manage would evenly help. Karagiannopoulos et al. (2005) oppose this applies only for companies producing informational products, in context of e-commerce standing for electronically deliverable, knowledge-based products such as software, digitalised intellectual property, e-books etc. The explanation lies in the cost of production and reproduction when latter mentioned is much lower with informational products because of minimal marginal cost, comparing to psychical products where cost centres are similar to traditional business.

Copycats are also more likely to emerge with the adjustment of their products or services on successful pioneers, yet it has been shown that such a type of threat can be diverted by adding new services or linking to powerful partners creating more complex online services (Hamilton, 2007) . Therefore the dissemination of information could generate new threats of substitutes but also expand the size of actual market (Porter, 2001).

Rivalry among competitors inclines to be escalated as electronic marketplace is largely open system thus "maintaining proprietary offers seems more difficult" (Papazoglou & Ribbers, 2006). Such claim is closely linked to threat of copycats that is considered as a source of it.

In terms of bargaining power of suppliers the shift in not quite definite. The benefit seems to remain in the possibility to seek and to access more potential business customers or even further cut mediators and begin offering directly to end-customers (Papazoglou & Ribbers, 2006). From the other side internet gives most companies identical access to suppliers, in this case power of suppliers decreases since switching costs for are minimal, (Karagiannopoulos et al., 2005).

2.1.2.2 Seven unique features

In order to supplement Porter's framework for further analysis of e-commerce revolution, Laudon and Traver (2013) determine seven unique features enabled by e-commerce technology: Ubiquity, Global Reach, Universal standards, Richness, Interactivity, Information

density and Personalisation. The most important elements for context of this thesis reflecting new discoveries will be presented below.

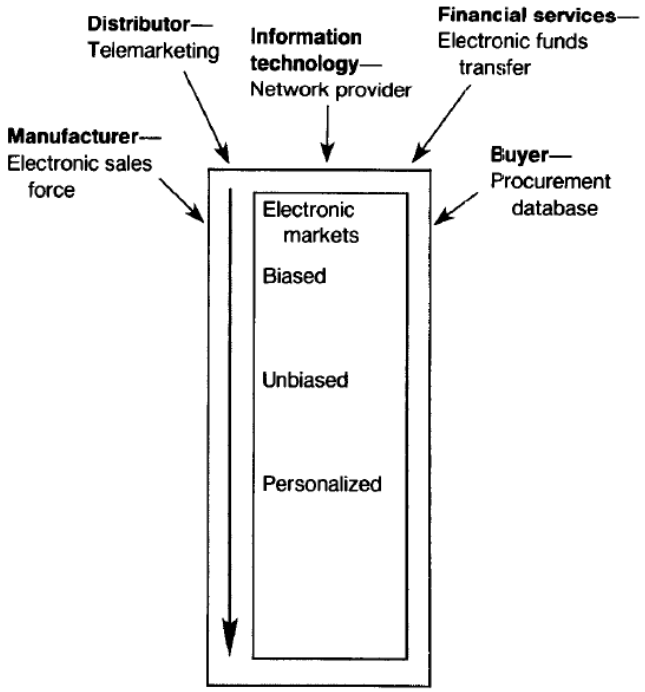
Ubiquity highlights non interrupted ever present state of e-commerce with elimination of attachment to physical space accessible from variety of devices leading into further categorization of e-commerce to mobile commerce and location based commerce(Laudon & Traver, 2013). The result is creation of numerous industry marketspaces as an integration of marketplaces. Rayport and Sviokla (1994) define marketspaces as way of conducting business where the possibility to separate information about a product and its physical presence occurs, the marketplace is in other words extended over traditional boundaries and extracted from geographic location. Customers benefits from reducing transactional cost because necessity to travel for good disappear (Laudon & Traver, 2013). Closely linked to this claim is interactivity as another aspect which refers to technology enabling bi-directional communication between merchant and customer substituting traditional face to face communication yet on much more massive scale. The image of individual communication is the starting point for option of personalisation which Jackson (2007) sees as replacement of neighbourhood merchant in terms of electronic marketplaces.

2.2 Electronic Market Hypothesis

Malone, Yates, and Benjamin (1987) suggested rise and ensuing evolution of electronic markets that became widely known as Electronic Market Hypothesis (EMH).

Despite fractional critique of EMH, many researches together with general trends supported the hypothesis. Especially in B2C markets, many of predictions have been proved true. For example, Information Technologies enabled decrease of coordination costs and so empowered the use of electronic markets (Glassberg, 2007). Therefore prediction of conversion from biased market to non-biased market and finally into personalised markets seems relevant (Malone et al., 1987). Where Biased markets refer to those with access to number of suppliers with favour to certain buyers or sellers, non-biased markets would be due to legal forces and competition deprived of their bias advantage and sequential overwhelming number of choices for consumers could paralyse rational decision making of a consumer therefore disabling efficient selection (Papazoglou & Ribbers, 2006). As those choices might be perceived as substitutes, logical development of decision aid based on personalised preferences would lead to personalised markets (Malone et al., 1987).

Figure 2.2 Evolution of Electronic Markets



(Source: Malone et al. (1987))

Mentioned EMH assertions are not presently valid for all internet sectors. In many of them **network effect** might represent reason for users while selecting specific service. The most successful services could sustain dominant because its value grow with more users engaged into this service (Rayport & Jaworski, 2002). Yet despite noticeable bias lasting with some internet intermediaries, those tend to serve as filters while receiving information, therefore overwhelming amount of choices shifted from selection of specific service to selection of information customer desire to receive.

Above mentioned holds true especially in case of internet intermediaries where company is not directly supplier itself, but enable users to become suppliers and also customers at the same time, mostly visible in C2C commerce.

2.3 Attitudes for delivering information

In terms of E-commerce Turban (2012) believes One-to-One approach is one of the greatest benefits of E-commerce and conclusion of evolution from traditional market's Mass marketing, through Market segmentation to One-to-One.

2.3.1 Mass Marketing

Mass Marketing has traditional roots and focuses on everyone or in other aspects on product itself. The main idea tends not to divide between ways of attracting new and existing customers (Collin, 2006). Such approach might be useful while building brand image or trying to penetrate market with new product. This approach used to be applied on groups, for instance families, seen as homogeneous with generally archetypical factors, however owing to IT revolution its applicability is likely to be considered dead (Kotler, 1989).

2.3.2 Market segmentation

According to Kotler (1989), Market segmentation is approach firstly introduced by Wendell Smith in 1956 which divides market into specific segments or in other words logical groups. The advantage while comparing to mass marketing appears obvious. Chances of receiving more positive responses are likely to be higher and Internet serves as an assistant provides more effective and easier way to reach mentioned segments using statistical and data mining methods (Turban, 2012). Modern approach stands for large variety of segments, usually regrouped for different campaigns. Main criteria for segmentations are Geographical, demographic, psychological, Cognitive, Profitability, Behavioural, Profitability and by contras Risk core categorizing low-risk consumers into another.

Internet once more allows maximum extraction out of provided criteria. For example Geographical segments might be easily evaluated through shared consumer's location that gives company opportunity to deliver targeted offers and messages resulting into separate subcategory of Location based marketing (L-commerce) (Chaffey, 2007), or another example of profitability segments categorizing customers depending on their value into specific segment by extracting tracked purchase history. It appears market segments provided useful tool in times without sufficient computing power in company disposal yet can still be useful as part of implemented strategy.

2.3.3 One-to-One marketing

Kotler (1989) believes different levels of segmentation might be distinguished and perceive individual customer as a feasible segment rationally following as next step of micro segmentation. Hence One-to-one marketing is process of understanding each customer separately and represents extreme form of segmentation (Arora et al., 2008). Nowadays segments seem to be a bit out-dated in online environment as with growing computing power users anticipate more personal approach, hence One to one marketing is becoming rather rule than an exception.

The goal is to build enough information wrap around user as precondition to clearly estimate their specific demands (Turban, 2012).This is different from traditional marketing where the aim was to attract as many customers as thinkable, in other words masses (Weng & Liu, 2004). Furthermore, since price for maintaining customer focused attitude within online environment tends to be cheaper comparing to traditional business, it can be argued that spending money on existing customers with building long-term relationship is preferred before attempting to acquire new ones, mostly because increasing price for such acquisition (Thorbjornsen, 2008). Easier access to two-way communication mentioned earlier also represents important enabler for One to One marketing. However, Zhang and Wedel (2007, cited by Arora et al. (2008)) claim, that incremental benefits of one-to-one promotions over segment or market oriented promotions is rather small. However, such claim is more valid in terms of traditional business because marginal cost for maintaining personalised communication with customer is high in the beginning, but small with higher number of total customers.

For better understanding of unlikeness of mentioned approaches the table of comparison is presented below.

Table 2.1 Comparison of marketing strategies

Factor	Mass Marketing	Market segmentation	One to One
Interaction	None, one-way	None, simple	Active, two-way
Focus	Product	Logical group (segment)	Customer-focused (one)
Recipient	Anonymous	Segment profiles	Individuals
Campaigns	Few	More	Many
Reach	Wide	Smaller	One at a time
Market research	Macro in nature	Based on segment analysis or demographics	Based on detailed customer behaviours and profiles

(Source: Turban et al. (2012))

2.4 Personalisation

Putting One-to-one marketing into practice means implementing decision commonly based on gathered data about a customer and reflecting it into particular marketing mix (Arora et al., 2008). Despite marketing personalisation as processes of delivering information another development can be distinguished: personalisation of products and services, usually called customisation. Arora et al. (2008) affirm that out of Marketing mix product itself should be customized and price and promotion seems to be object of personalisation. Mobasher (2007) on the other hand sees customization as non-automated personalisation with users being in control of whole process and perceive product personalisation as whole different area to explore. Terminology is not fully united. Nevertheless this paper focus mainly in web personalisation it is desirable to outline also product personalisation as both are ideologically connected especially within online environment.

2.4.1 Customisation

Although personalisation and customisation describe analogous process those are not complete substitutes. Arora et al. (2008) affirm difference mainly by presence of proactive action by customer whereas they specify one or more requirements. Despite that, most customization issues have an impact on product or service itself thus reflects product personalisation.

In context of e-commerce barriers for product personalisation lowered. The evolution of personalised products is reflected in moving towards growing customer's satisfaction while altering from craft production, through mass customization and probable culmination in full personalised products based on aspects like body condition of individual and their aesthetic and psychological perforations (Berry, Wang, & Hu, 2013). Consumers driven adjustment of not only appearance but also functionality and performance is becoming feasible in large expanses (T. Jones, 2002). Arora et al. (2008) affirm the level to which product is customized is only matter of competitive issues and customer's choice. Mostly owing to technology development with emerging advances in mobile phones, online shopping, community portals that are linked to computing price decrease; those appears to be easier achievable (Oulasvirta & Blom, 2008).

It should not be forgotten to perceive software and services also as products therefore objects of customization, this can be noticed in everyday process. Post-personalisation for instance seems to be topical procedure of customization effortlessly visible in mobile industry with users adjusting operational environment, moreover also desktop software. Furthermore the pre-personalised products are likewise more frequently noticeable in the past decade. For instance, Dell company profits from retailing custom built centred around client's needs through guided internet based process while additionally eliminate middle reseller and multiple created value (Haylock, Muscarella, & Schultz, 1999). Pattern shows customization to be more frequent in high competitive industries such as restaurants, banking, apparel, information technology with clear driver of greater customer's satisfaction, delivering more unique product (Arora et al., 2008).

2.4.2 Personalised content

In context of understanding aspects of personalised content website it is convenient to determine the **non-personalised** website where such page provides equal content to every user regardless their profile, click behaviour or past visited online content. Contrast to this state is personalised content.

Probably briefest explanation of personalisation wrote Ralph and Searby (2003) – "Whenever something is modified in its configuration or behaviour built on information about the user, this is personalisation." Goy and Ardissono (2000) describe the aspects of personalisation as "General technique for the customization of services to the user, which have been

successfully, employed in ecommerce Web sites." Here rises close connection to customization, where the difference lays in on what elements technique is applied. In terms of content it simply brings possibilities to offer non-unified content to each unique customer and match offered services with advertised content based on their preferences.

Comparing different business models personalisation might be seen as large added value therefore high degree of personalized services often reflects premium value driven models with less participation in those driven by cost (Osterwalder, Pigneur, & Clark, 2012). Empirical evidence can be spotted in practice with Amazon as a one of largest online retailers. Deploying of one to one approach appeared to become one of critical factors believed to make enough key value driver for company's success winning over competitors offering lower price (Rayport & Jaworski, 2002). The company implemented one of first such systems to offer instant recommendations based on customer's previous purchases yet also timely delivered e-mail proposals formed according to pre-selected categories of customer's interest. In present conditions "personalisation has become one of the most important organizational strategies" focusing on revenue expansion and increasing customer's satisfaction and loyalty. Although the switching cost for customers in terms of electronic shopping is minimal and often mean just a matter of a click, loyalty can be improved by choosing already experienced interface rather than always spend time learning a new one (E. J. Johnson, Bellman, & Lohse, 2003). However, personalisation tends to have stronger influence on loyalty since it adapts to customer's preferences.

2.4.3 Types of personalisation

Jackson (2007) affirms two main categories of personalisation: Push and Pull.

'Push' approach reflects information being delivered to customer automatically without their specific demand which implies that their explicit presence is not compulsory. Mulvenna, Anand, and Büchner (2000) see main objective of personalisation exactly in delivering information customers prefer or seek without expecting explicitly the act of asking for it. Despite web based communication this might include also personalised email offers.

The 'Pull' approach insists on conscious demand raised by user when they intentionally search for content and results are certainly adjusted by personal criteria. This would deliver dissimilar results for each inquiry even with same input. With tremendously expansion of total amount of information accessible on the Internet, the retrieval of desired information

in quick and precise way became more challenging (Saleheen & Lai, 2013). The task is then to translate user's basic and often short descriptions into demanded results more likely to satisfy their informational needs (Teevan, Dumais, & Horvitz, 2010).

Another perspective to distinguish is characterisation between adaptive and adaptable systems. Iivari and Iivari (2006) see adaptable approach as the idea of definitive user participation in will to adjust system accordingly to their preferences.

2.5 Recommender systems

Employment of extensive personalisation as a reflection of one to one marketing within online commerce can be supported by recommender systems – software solutions capable of recommending information and products (Hung, 2005). Recommender software for e-commerce receives information about customer's preferences and recommends other goods that are likely to match their needs (Sarwar, Karypis, Konstan, & Riedl, 2000). On the other hand even RS can be labelled as non-personalised and that is when identical recommendations are provided to all customers, as for an example accounting major trends. (J. Ben Schafer, Konstan, & Riedl, 2001). Yet it is believed that recommender systems with high degree of personalisation enabled pioneers such as Amazon or E-bay to achieve their market position also owing to implementing such techniques and also serve as object for second sign of their success which is reflected by the fact that those are widely used (Andonie, Russo, & Rishi, 2007).

Required information crucial for successful recommendation can either be collected as mined data from customer's behaviour consequently building their model or through hand programmed algorithms provided by experts (J. Ben Schafer et al., 2001). Another source might be demographic information containing nationality, age or gender or else more behavioural aspects focusing on products customer liked and followed on social networks (Bobadilla, Ortega, Hernando, & Gutiérrez, 2013). System afterwards propose list of top-N products seeing as the most suitable for targeted customer (Sarwar et al., 2000).

Herlocker, Konstan, Terveen, and Riedl (2004) believe that performance of commercial systems should be measured by user's satisfaction calculated by items purchased and not later returned as a superior benchmarking technique to mere customer's rating response. For the sake of support of this claim Teevan et al. (2010) affirm existent variation in what users consider relevant to their enquiries therefore even applying the right algorithm do not ensure

definite satisfaction for both involved sides. Furthermore, they identify lasting potential for personalisation as a large gap between how efficiently search, recommender algorithms operate, and how they could perform if coded or adapted separately for each individual. This is different from basic process of adapting user's model and consequently applying unified set of algorithms.

Brusilovsky (2001) states that the better the performance of adaption is presented the less searching should be involved in online buying process. This assumption may be validated with Häubl, Dellaert, Murray, and Trifts (2004) demonstration of buyer's behaviour with personalised product recommendation done for Institute for online consumer studies based in Canada. Customers involved significantly less effort at decision process comparing to those for whom those support systems were not available. The distinction was shown with inspecting description of 11.65 products on average comparing to 6.58 products with PPRs available. According to different research with focus on sales improvement were noticeable trend of rise up to 2 – 8 %, even though the biggest improvement were shown in daily use products with large variability like books, music, audio-visual content and articles (Weihong & Yi, 2006).

Time plays important role for Czech e-commerce customers. Research conducted by shoptet.cz (2013) revealed, that the most important factor for 78% of customers is time saving for those who selected online shopping over traditional one. Furthermore, 70% of them also mentioned comfort.

Visitors exploring extensive offer within electronic commerce tend to not purchase anything therefore recommended content might aid them find product they wish to purchase (J. Ben Schafer et al., 2001). RS can be seen as some kind of bridge connecting what customer knows and what they wants to know in terms of seeking for products (Andonie et al., 2007). Also after successful purchase recommended content might navigate user for further actions as been presented for instance by Amazon (J. Ben Schafer et al., 2001).

Assisted shopping with personalised recommendations can be beneficial for both customers and sellers (Häubl et al., 2004) yet both sides anticipate somewhat different requirements. Goals for sellers vary from consumer's one in specific points even though the main target is actually similar. Those are mainly from functioning side of RS where the demand for real-time processing not dependent on any human assistant is required (Andonie et al., 2007). Another goal can be aspect to be able to improve long-term relationships and build positive image of company in eyes of e-shop visitors.

2.5.1 Challenges of Recommender systems

Several challenges are still faced in terms of recommender system research. The major ones hold to be repeating across different systems, yet influencing several approaches more than the others.

Problem of sparsity in fact presents reason of implementation and sticking point for RS at the same time. Since amount of available items is likely to be extremely large the RS might help to guide customer through purchasing process, but on the other hand also shows very small overleap between two customers. Hence majority of products may get minimal attention (Lu et al., 2012). Sparsity problem is mainly present in Collaborative filtering (Ya, 2012).

M. T. Jones (2013) points out another challenge linked to extensive recommendation systems which is scalability. Despite solid results with small and medium size samples traditional recommender systems could face problems processing large amount of data especially while computing in real-time, therefore requirement for computation growing with both number

of customers and products is existent. Lu et al. (2012) believe that main impact is mainly in computational cost and the problem might be solved by not using global re-computing but only adjusting previous outcomes.

Cold start or new user problem is presented with not enough gathered information about user from the very beginning. Since this is likely to provide better base for faster and more accurate recommendations, sharing information among other websites can bring profit, yet this apply more for smaller sites since large e-commerce places tend to perceive their enormous variety of data as competitive advantage (J Ben Schafer, Konstan, & Riedl, 1999).

Further goals for users of RS might be demand for accuracy, ability to affect the results by conscious action and system to be believable (Andonie et al., 2007). Credibility plays important role especially in cases of being not completely convinced about firm's value proposition or if recommendations appear as not clearly justified, customer might react with a negative attitude (White, Zahay, Thorbjørnsen, & Shavitt, 2008)

Since present choices serve as foundation for future ones, one of major assumptions for satisfactory qualitative results is customer's preference on stable characteristics or alternately with predictable deviations (Arora et al., 2008). Yet Herlocker et al. (2004) speculated the existence of 'magical barrier' for algorithms caused by natural variability that may prevent programmers from reaching higher accuracy. Andonie et al. (2007) suggest another negative aspect of RS which is its incompetence to cover full spectre of possibly desired products due to customers incompetence to deeply consider those in their interest. In other words, the gap between highly desired and well-sought products and those not have been paid that much interest to, is likely to become greater in scale.

2.5.2 Types of Recommender systems

For the sake of understanding development and variation of different systems, brief explanation for most used ones is presented below. Each set of algorithms may serve on different level of satisfaction one different sets of data (Herlocker et al., 2004). Therefore one that suits particular situation can fail in others.

2.5.2.1 Traditional Data mining

Data mining includes different sub-techniques of knowledge discovery in databases while one of the most commonly used is association rules technique seeking for relations between two

sets of products. In other words the fact that product from one set implies presence of product from other set to appear in same transaction (Sarwar et al., 2000). Agrawal, Imieliński, and Swami (1993) defined measurement entities such 'support', 'confidence' and 'lift' in order to indicate how useful particular rule is. While confidence explore strength of implication focusing on "the conditional probability of seeing Y given that we have seen X", support measure portion of transactions containing both products alias its frequency (Sarwar et al., 2000). Kim, Li, Park, Kim, and Kim (2006) remind that that confidence is non-symmetrical and thus have different value for each product in interaction examination, contrasting support that appears to be symmetric. Lift then take both previously mentioned entities into consideration for the sake of necessary prediction of how certain response stands comparing to average response for population as one, therefore any value greater than 1 suggests significant association (Kim et al., 2006) The big advantage stays with little need for accounting user's previous information and behaviour although this may lead to not fully understanding their needs, therefore low level of personalisation (Ya, 2012). Modelled behavioural aspects might be relevant to majority of users the challenge stays with discovering non-typical users who elude ordinary behaviour (M. T. Jones, 2013).

2.5.2.2 Collaborative filtering

Collaborative filtering is another subpart of Targeted Marketing working on exploration of analogous usage patterns and matching with relevant group afterwards. Herlocker et al. (2004) affirm that this is considered one of the most successful methods for recommender systems working through far-reaching variety of algorithms written to generate recommended content. Despite possibility to calculate user model uniquely from their behaviour, more effective approach appears to be the one taking also other customers into account (M. T. Jones, 2013). Historical agreements with other users in products rating or previous purchases helps to build so called neighbourhood for the sake of recommending other products, that neighbours have in common yet targeted consumer does not so far. The size of neighbourhood might be adjusted in order to provide more accurate results but this require more time signifying more gathered data. Impact of size was shown mainly with top 10 recommendations, therefore quality increase with extending the size of neighbourhood, but only to certain point after which it becomes worse (Sarwar et al., 2000). As conclusion one of big advantages of collaborative filtering is the ability to improve in time, furthermore also

capability to recommend across various types, great self-adaptability and the effect of shared satisfaction (Ya, 2012).

2.5.2.3 Content based filtering

In content based filtering goods are characterized by sets of attributes related to each item, usually extracted from given keywords or commonly used words in product descriptions. Those are then compared to user preference model calculated by previous activity or rating of not on whole products, but also specific features (Mobasher, 2007). The main problem raises with demand for clear description and adequate data structure categorizer (Ya, 2012) and also its tendency to overly specialize recommendations due to focusing on previous activity, therefore eliminating recommendation of unexpected products that is considered the most useful by customers (Mobasher, 2007) .

2.5.2.4 Hybrid systems

Current evolution of Recommender systems demonstrate importance of hybrid systems that combine benefits from each system included (Bobadilla et al., 2013). That inclines avoiding certain weaknesses and improving overall performance, for instance preventing cold start problem (Lu et al., 2012). For instance, Kim et al. (2006) believes that combination of collaborative filtering and rule based models shows promising results for information filtering. M. T. Jones (2013) points out that despite efficiency hybrid solutions also increase complexity of systems therefore raise demand for further resources.

2.5.2.5 C2C recommender systems

According to Xuefeng, Guoping, Weijia, and Zhao (2007), software solutions for C2C marketplaces are relatively challenging to manage due to limited techniques and low levels in all three areas while searching for goods: personalisation, automation and permanence. Also scale of research focused on such systems is much poorer than the one dealing with B2C marketplaces. The main difficulty rises from non-repetitive character of placed items to auctions so recommendations are mostly dependant on their description. Cheng and Guangyao (2007) note that not only consumers preference but either sellers preference should be taken into consideration.

He, Lu, and Zhou (2008) suggest that online businesses operating on C2C basis should despite developing more convenient transaction records searching also improve

communication processes in order to improve ease of use therefore practicality for customer. Moreover, research suggests that C2C service providers should understand customer's behaviour and preferences in order to improve their business, although the same apply either for sellers.

2.6 User profiling

Attempting to personalise Web site or provide unique offers to customer, the system is expected to distinguish among different users or groups – this is called user profiling (Eirinaki & Vazirgiannis, 2003). In other words a company has to be able to fully recognize to whom information is delivered to. Systems differ not only in techniques for prediction but also in numerous techniques used to build user profiles.

Despite common single profile identity serving as a reference point for identifying with any combination of unique number, e-mail or username Yang (2010) recently proposed identifying users by capturing their strength of browsing behaviour which was demonstrated to be accurate and viable with extension of possible fraud users detection. The approach operates with attributes like time and duration of web sessions, pages visited during these sessions or pages visited across World Wide Web. Therefore big advantage tends to be recognition across different websites with minimalizing effect of stove pipe systems. This appears when potential to share data across different systems is existent yet not applied, therefore each system across e-commerce spectre build their own user database even though supply of similar products are offered on contain e-commerce site (Ralph & Searby, 2003).

Cookies are one of techniques used to recognize user. According to Information Commissioner's Office (2012) cookie is a 'small file, typically of letters and numbers, downloaded on to a device when the user accesses certain websites'. It is then send back to former website on each latter visit to authorize the user's device.

Essentially these files have to contain information such as an identification number and last access date and time, although more evidences can be stored. These are small text based files saved on visitor's computer while each webpage has usually its own cookie file [or set of files]. The same rule applies also for browsers. If online visitor uses two different browsers on one computer, two different cookies will be saved for each one. (Chaffey, 2007)

Turban et al. (Turban) remind the question of privacy. One of subjects being discussed is using cookies. Where cookies might be helpful to assist with identifying user, it also might be

seen as privacy invasion. Despite the fact user may prohibit use of cookies in their browser, majority of them do not even know about theirs existence. As PricewaterhouseCoopers (cited by Information Commissioner's Office, 2012) state in their 2011 survey, 13% of those surveyed claim that they fully understood how cookies work, 37% had heard of internet cookies but did not comprehend how they work and 50% were aware of first party cookies. Therefore current EU Cookie Regulations 'require that user or subscriber have to approve using of cookies. Conscious approval must be involved in some form of communication that stem from a user that means the individual knowingly indicates their acceptance.

2.6.1 Problem of Privacy and trust

One of most discussed problems facing tailored marketing is privacy issues. Since requirement for qualitative results is based on accuracy of customer's preferences, user should be aware they loses anonymity and almost every action will be recorded (Eirinaki & Vazirgiannis, 2003). Yet Chellappa and Sin (2005) argue that customer is likely to share their personal and preference information in exchange for premium value such as personalised product and services shopping experience, when this factor is explained with making concessions for convenience. Their research showed that customers valuated personalisation as almost two times more influential comparing to concerns for privacy, indicating that privacy issues should not be ignored yet the added value is likely to overcome such concerns.

Yet the assurance of capsuled data protection should be provided for customers even though personal data exceed boundaries of single site, mainly because those include not only preference attributes but also identification data and transactional data (J. Ben Schafer et al., 2001).

In terms of trust Andonie et al. (2007) see solution in two main aspects, firstly implementation of confidence metrics like rating and customer response to be visible to all might not only improve credibility, but also make RS better, secondly the chance to make system adaptive can grant for impression that customer is fully in charge and risk of manipulation is minimal.

2.7 Conclusion

In the Literature review chapter author focused on two main parts. In the first part, essential terms within the spectre of e-commerce were defined together with the logical development

from mass marketing to personalised information delivery. Electronic Market Hypothesis was chosen as a theoretical assumption for such development and the reasons why electronic commerce merchants lean towards personalised solutions were also considered. In parallel, technology was highlighted as an enabler for such development and instrument to positively improve customer's shopping experience.

In the second part, author described in detail what a personalisation is, considered possible benefits of implementing personalised solutions and finally summarised basic approaches for personalisation. Different techniques used in personalised approach were also mentioned. In addition, several methods used for personalisation were defined together with different types of recommender systems since those serve as pillar in many one-to-one strategies.

The aim of this paper is to investigate and verify the importance of these factors in terms of perception and importance of personalisation in e-commerce for customers in Czech Republic. Furthermore, also to what level is consumer's shopping behaviour influenced by personalisation and what possible benefits can be assured. Despite earlier mentioned, other three major issues were taken into account: loyalty, privacy and recommendations. After summarizing the most crucial factors and key points of the literature review, following hypothesis were formed:

H1. Personalisation is more effective for building long term customer relationship than for acquiring new customers.
H2. Personalisation has positive impact on loyalty of customers.
H3. Personalised shopping experience compensates customer's concerns about privacy caused by tracking shopping process.

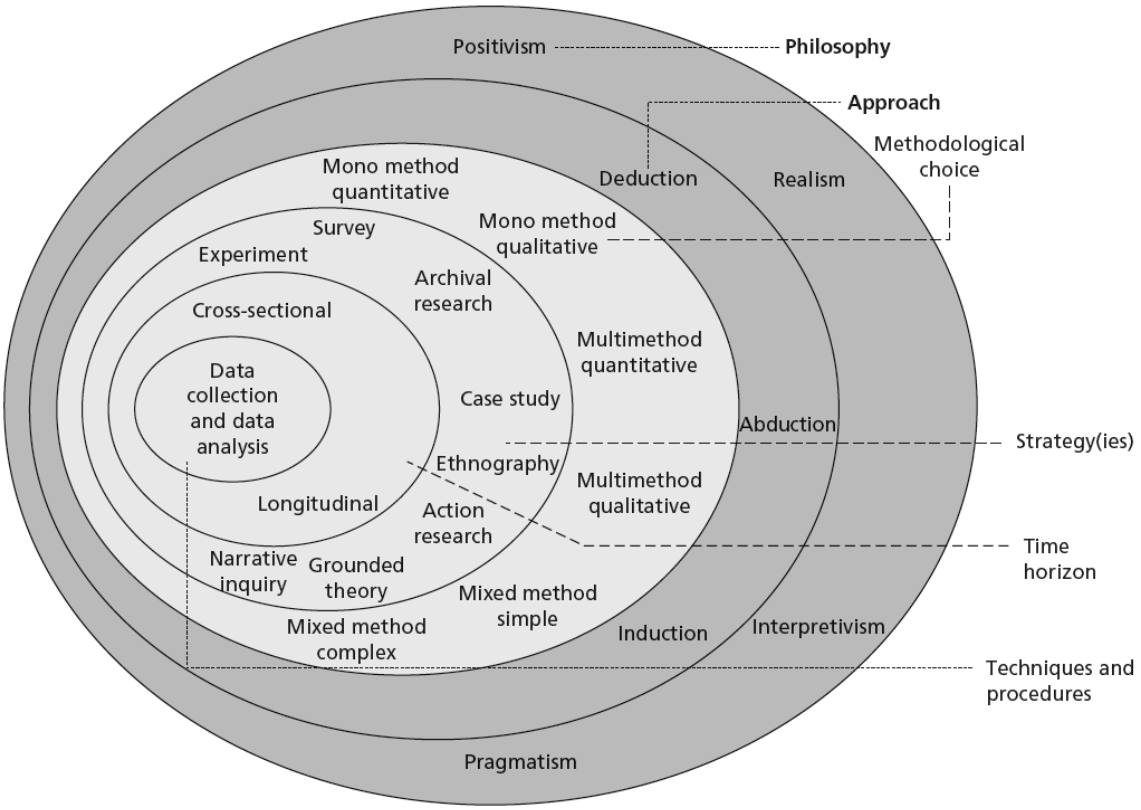
3 METHODOLOGY

In this chapter, the aspects of primary data collection are described. Details about the research approach and strategy justification for chosen methods will be defined on the basis of the objectives given in the previous chapter. Furthermore, the population, sampling and the way of distribution chosen for the research will be defined together with the structure of a questionnaire. Finally, limitations of the research will be determined.

3.1 Research framework

Saunders et al. (2012) define 'research onion' as a general research procedure that can help the researcher to render choice of suitable method by 'peeling' six layers of the onion model. Every layer represents a degree in which the method can be examined and together they give a whole description of the researcher's attitude. Those six stages are: philosophies, approaches, strategies, choices, time horizons, techniques and procedures.

Figure 3.1 Onion research framework, source: Saunders, Lewis, and Thornhill (2012)



3.2 Research philosophy

Research philosophy is the first step of the onion framework which refers to the development of knowledge and its character. This shortly captures the author's views on how to perceive the world and it has further impact on the research strategy (Saunders et al., 2012). Although the research philosophy is often selected from previous traditions prevalent in social research, Easterby-Smith, Thorpe, and Jackson (2012) believe that even a simple awareness of philosophical assumptions might increase the quality of a research and can also enrich researcher's views, mostly by answering the question about the relationship between data and theory. Most debated concerns among philosophers include two parts: ontology and epistemology**.**

3.2.1 Ontology

Ontology operates with assumptions focused on how the world functions and their commitment to specific views. Within a business research two major aspects of ontology should be taken into account: Objectivism and Subjectivism (Saunders et al., 2012).

Objectivism suggests that social actors appear as external factors that have no importance in fashioning. It is a social research approach developed from natural sciences when the decision was made to employ vastly successful methods of natural science to investigate various social phenomena. Subjectivism, by contrast, holds that social phenomena are created from the perceptions and consequent actions of those social actors concerned with their existence (Saunders et al., 2012)." In other words, subjectivism declares that it is essential to study details of a particular situation in order to fully understand examined social phenomena, because those are in constant state of revision.

Since the author of the research believes that social phenomena can be observed and the reality can be increasingly understood through accumulation of further and therefore more complete information the objectivism was chosen as the approach for research design.

3.2.2 Epistemology

Epistemology explores different forms of questioning the nature of the physical and social worlds. Although numerous views are mentioned in the 'onion' framework, Easterby-Smith et al. (2012) define the two main approaches mostly used in this context: positivism and social constructionism.

For the purpose of better understanding the difference between mentioned approaches, Easterby-Smith et al. (2012) define eight major contrasts in comparison with traditional positivist research.

	Positivism	**Social Constructionism**
The observer	Must be independent	Is a part of what is being observed
Human interests	Should be irrelevant	Are the main drivers of the science
Explanations	Must demonstrate causality	Aim to increase general understanding of situation
Research progresses through	Hypotheses and deductions	Gathering rich data from which ideas are inducted
Concepts	Need to be defined so that they can be measured	Should incorporate stakeholder perspectives
Units of analysis	Should be reduced to the simplest terms	May include the complexity of the ´whole´ situation
Generalization through	Statistical probability	Theoretical abstraction
Sampling requires	Large numbers selected randomly	Small numbers of cases chosen for specific reasons

Table 3.1 Contrasting implications of positivism and social constructionism
source: Easterby-Smith et al. (2012)

Even though it might be claimed that the author is relative part of what is being observed and also the interest is a fragmental driver of science, positivism was chosen for the purpose of the study. This is mostly because positivism is based on the assumption that it is possible to measure social properties and establish valid knowledge about how they work. Hence, it has become a paradigm that such an approach provides an adequate way to investigate human and social behaviour. In addition, positivism with modest essence of social constructionism can still provide satisfactory and valuable results (Easterby-Smith et al., 2012). Despite the mentioned aspect, positivism covers all major parts required to be claimed suitable for author's belief; this mostly in aspects of required causality since he believes that nothing occurs without a reason.

3.3 Research Approach

The research in this paper starts with the theory. This fact was used as a premise for deducing the hypothesis with sequential aim to test the theory. Therefore, the deductive approach was chosen. Deductive approach is mostly often linked to positivism and it has a characteristic requirement to define such concept that can be practically measured, mostly often quantitatively. At the beginning of the study, an existing theory is taken into account and it is further extended by an idea on theoretical foundations. With a developed extending idea hypothesis would be formed and subsequently tested by conducting new research (Saunders et al., 2012). Social scientist must specify data collection in relation to the notions that resulted into hypothesis (Bryman & Bell, 2007). This process includes data collection, processing and evaluation. In the end, hypothesis is either confirmed or denied (Saunders et al., 2012).

3.4 Research strategy

For the purpose of the research, the need of primary data is existent. Primary data refer to the information gathered by the research, not collected. Secondary data, by contrast, include already collected information found in existent sources (Sekaran, 2003).

Taking primary data into account, it is important to distinguish between qualitative and quantitative research methodologies as those represent the two most common research strategies. For this purpose both are shortly described.

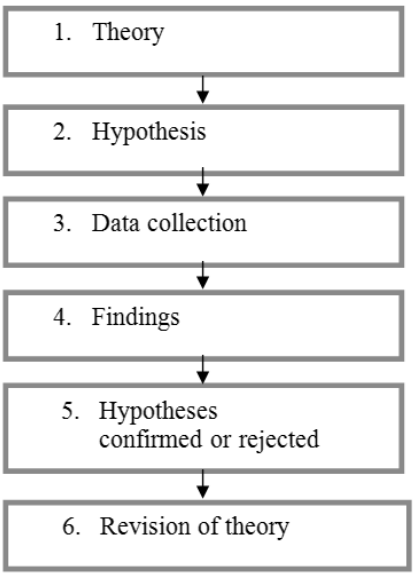


Figure 3.2 The process of deduction, source: Bryman and Bell (2007)

3.4.1 Qualitative

According to Cooper and Schindler (2008), qualitative data are a reflection of an essential character or a nature condition of something. It refers to the meaning and tends to be highly subjective and sensitive to human error and reflection of bias in the procedure of data collection and interpretation with a greater weakness emerging with impossibility to generalise such qualitative results to a larger population (Easterby-Smith et al., 2012).

3.4.2 Quantitative

Quantitative research attempts to measure exactly specific values of the examined aspects and it is generally associated with the deductive approach (Saunders et al., 2012). Aspects are often composed of participant responses transformed, categorised and presented in numbers for the purpose of being able to serve for the statistical analysis (Cooper & Schindler, 2008). Together with the positivist paradigm, the main advantage lies in the ability to provide broad coverage of various situations, and fast and economic solutions. on the contrary quantitative methods tend to be inflexible and artificial, and they simply lack the tools required for the full understanding of processes people attach to actions (Easterby-Smith et al., 2012).

As an overview, Bryman and Bell (2007) describe essential differences between quantitative and qualitative research strategies in connection with the research philosophy.

	Quantitative	Qualitative
Principal orientation to the role of theory in relation to research	Deductive, testing of theory	Inductive, generation of theory
Epistemological orientation	Natural science model, in particular positivism	Interpretivism
Ontological orientation	Objectivism	Constructionism

Table 3.2 Essential differences between quantitative and qualitative research
source: Bryman and Bell (2007)

3.5 Research Method

The quantitative strategy is generally associated with a survey research. Even though a survey is not the only existent methodology, it is considered a dominant one and was selected as a research method.

Survey represents a measurement process used to collect information by applying structured interview. Various types of questionnaires might be used for the collection of data, while two main choices are present according to how those are managed: Interviewer-completed and self-completed. Whether or not the process involves a human interviewer, the questions should be carefully crafted and logically structured in order to provide comparable data across the subgroup of the chosen sample (Cooper & Schindler, 2008).

Given the benefits and the difficulties of specific types of interviews, the self-administered questionnaire was chosen as the most appropriate method, mainly because of geographical limitations since the author was not present in the Czech Republic during the process of collecting data.

Three types of self-administered questionnaires were to be considered: internet mediated, postal, and delivery and collection ones. to choose the most appropriate type it is required to consider numerous aspects. Saunders et al. (2012) proposed several examples, such as characteristics of the target respondents, the likelihood of response rate influencing the final sample size, or the nature and amount of questions intended to collect information.

Out of the three options, the online mediated questionnaire was selected. The most important reasons are highlighted below:

- Online questionnaires provide an efficient data collection solution with a low price and low time demands.
- Since the research focuses on online shopping, the targeted respondents are likely to be internet-literate; this option means providing them with an easy-to-use data collection channel.
- Online collection most likely targets respondents that would comply with the requirement to have experience with online shopping process.
- Questionnaires can be delivered to a large number of respondents and over long distances, which is providing a relatively unique population reach.

On the other hand, Saunders et al. (2012) also state possible disadvantages:

- Response rate for online questionnaires is usually low, 11% or lower.
- Inflexibility of questionnaire might occur if questions given are too specific or gives too few options.
- Possible misinterpretation of questions.

3.6 Population

Population describes a whole set of individuals to whom the decision relates (Easterby-Smith et al., 2012) . The research is focused on all citizens of the Czech Republic who shops or have, at least in the past, participated in an online shopping process. According to the research conducted by APEK (2013) within Czech e-commerce market, the most common age group encompasses customers in the range between 25 and 34 years, however, it was not possible to acquire any supplementary details to this statement. Visa Europe (2013), for instance, claims this stays true mostly considering sales volumes of purchased goods and services, since older customers are more likely to dominate with a higher buying power. While younger customers aged 18 to 24 tend to buy rather regular goods like clothing, shoes, electronics, books or music, more costly products are often the objective of the older customers.

For the reasons mentioned above and also because of the lack of information available about a typical Czech e-commerce profile customer, no other limits have been established. Thus, no specific age group of users was selected as the targeted population for questionnaire fulfilment and the only requirement being the demographic citizenship and an engagement in online shopping.

3.7 Distribution of questionnaire

As mentioned earlier, questionnaires were distributed over the internet since the author was not present in the Czech Republic during the research. The main channel chosen for distribution was social networks, with an emphasis on organic sharing. Furthermore, posting into online discussion groups was used as well as a supplementary distribution channel, yet in the latter mentioned case the actual acquisition of respondents met the predicted low response rate. This development could have been observed because both channels were used separately in time. However, as a result of distributing through social sites where young people are more likely to be present, the representation of elder population was expected to be reduced.

Google Forms application was used because it provides an easy tool to create interactive questionnaires and it enables sequential export to excel spreadsheet, required for detailed statistical analysis.

3.8 Design of Questionnaire

Different types of closed questions were used as those help respondents to make quick decisions and are coded to be subsequently easily analysed (Sekaran, 2003). Examples of the different types employed are single answer questions, multiple answers questions and scale questions.

The first part of the questionnaire is an introductory part that investigates essential personal information, and separate respondent eligible for filling the questionnaire.

1. Citizenship: The question asks whether the respondent lives in the Czech Republic. This question is dividing since the answer 'no' means an immediate termination of the questionnaire completion.

2. E-commerce engagement: Once again, the question is posted to separate respondents who have never shopped, influenced or participated in online shopping process.

3. Gender: Splitting e-commerce customers according to sex is vital for discovering patterns among various answers and also provides a general image about the sample.

4. Age: Age was not restricted for the purpose of the study and four answers were offered: 18 - 24, 25 - 34, 35 - 50 and 50+. The reason for having chosen this division was the claim, that most active age group in e-commerce is 25 – 34 years old (APEK, 2013), giving an option for comparison towards other age groups.

The second part of the questionnaire inquires about shopping habits of the respondent to gain better image for subsequent analysing outcomes.

5. Online shopping frequency: The question investigates approximate frequency of engagement with online shopping and it is a question of a scale type. Respondents could have chosen on a scale from 1 to 7, where the lower the number the lower the frequency was. Numbers were supported by a time mark where 1 reflected occasional shopping estimated at once a year engagement, 7 then represented regular shopping engagement, meaning weekly participation.

6. E-shop Loyalty: For exploring how much the participants are loyal to particular e-shops four options were given: Exclusive loyalty to one e-shop, loyalty to several favourite e-shops, having several favoured e-shops but not feeling particularly loyal in terms of buying there and no loyalty at all.

7. Reasons for Loyalty: In the case of loyalty to several e-shops it is desired to explore possible reasons for such a choice. Six different aspects were offered with a possibility to add one's own choice. Offered options covered were: the lowest price, familiar shopping environment, special offers, easier discoveries, discomfort of multiple registrations and trust.

8, 9. E-shop origin: Having given the assertion that Czech based e-shops tend to have much lower level of personalisation involved, it was desired to discover if the favoured e-shop is Czech based. The next question investigated reasons to shop in foreign based e-shops rather than Czech e-shops. Offered reasons partly copied the most common factors for shopping online in the Czech Republic complying with online rivalry like lower price, variety of products, normally not available goods (APEK, 2013) and, in addition, options comprising personalised techniques such as shopping experience and recommendations. Possibility to add one's own choice was also present.

The third part investigated the attitude of respondents towards personalisation itself and it focused on the basic perception of personalisation.

10. Awareness of personalisation: The intent of this question is to explore to what extent are the customers aware of personalisation techniques in e-commerce. Three options were given: Positive, negative and a state of being aware without subsequent attention given. This question does not focus on whether the respondents are aware of the term itself, since it was fully described in questionnaire, but rather how those techniques are noticeable for them.

11. Personalisation rating: In this part, respondents could rate the level of personalisation employed within Czech e-commerce websites on a scale from 1 to 7. Verbal supplements were used to facilitate understanding of the scale where one matched 'very poor' and 7 meant 'very good'.

12, 13. Importance of personalisation: For exploring how much customers evaluate the importance of personalisation, a score question was used giving a scale from 1 to 7. The following question examined the same aspect but with added consideration of price. In other

words, how important is the personalisation towards the price and whether the comfort rising from personalised techniques can compensate the price variance.

In the final part eight questions were used to be rated on a scale from 1 to 7 considering how relevant a statement is for the respondent. Three main parts of personalisation benefits were aimed in this part: firstly, statements about recommended products through e-commerce system, secondly, privacy and trust issues questions and finally, an impact on loyalty.

14. Recommendations as aid: The question investigated to what level customers agree with the statement that recommendations can help to find the sought product faster.

15. Price comparison: Recommended products can be more expensive comparing to other competitors. Since the internet offers more accessible information also in the terms of price comparison, the aim of the question is to investigate how customers react to offered recommendations. If they accept it or compare the price across different websites despite the extra effort and time spent.

16. Products discovery: Recommender systems can offer customers the products they are not currently looking for. The questions aim at to what point the respondents consider this statement true.

17, 18. Privacy concern: E-shops often monitor many factors about the customer in order to be capable of delivering personalised experience. This may comprise of personal information, shopping behaviour or browsed products. Firstly, we investigate how customers perceive monitoring as an invasion of privacy and secondly, we ask if a personalised shopping experience can be a sufficient reason to accept such monitoring.

19, 20. Loyalty: The first question asks about customer's tendency to change their favourite e-shop if a different one provided better personalised services and thus more comfortable and faster shopping experience. In other words, we explore whether such techniques would be sufficient for the customer acquisition. The second question investigates loyalty from customer's point of view. How important is the personalisation for them to maintain loyalty towards a particular e-shop.

21. Entertainment: Recommendations and personalised search results are often employed on entertainment websites. The purpose of this question is to explore if participants valuate personalisation techniques more in likewise industry.

To summarize and highlight links for final part of questions to the Literature review chapter, table 3.3 will be presented below.

Table 3.3 Rationale for research questions and their relationship to the literature review

Particular questions		Reasoning	Relation to Literature Review
14	Recommendations help me choose desired product faster	All questions (14 – 16) seek for information about recommendations and examine: to what level are those useful how they can they help to shorten time spent on buying and discovering desired products	Häubl et al. (2004) Saleheen and Lai (2013) Teevan et al. (2010) Steward et al. (1999) Herlocker et al. (2004) J. Ben Schafer et al. (2001) Andonie et al. (2007)
15	I compare price of recommended product towards other e-shops		
16	Recommendations help me discover products I am currently not searching for		
17	I worry about my privacy if e-commerce site would track my shopping process.	Questions (17-18) seek for concerns about privacy connected with personalised shopping techniques	Eirinaki and Vazirgiannis (2003)
18	Personalised shopping experience is enough reason for website to track my shopping process		Chellappa and Sin (2005)
19	Personalised shopping experience could be reason to change my usually used e-shop	To find out if personalisation can serve as a competitive advantage to acquire new customers	Hamilton (2007) Thorbjornsen (2008)
20	Personalised shopping is sufficient reason to shop mostly on certain e-shop	To explore if personalisation can help maintain existing customers by building long-term relationships	(Thorbjornsen, 2008)

21	Personalised experience is more important to me on entertainment portals	To analyse to what point respondents perceive entertainment portals as part of e-commerce and how they pay attention to employed personalisation	Karagiannopoulos et al. (2005) Rayport and Jaworski (2002) Bobadilla et al. (2013) Weihong and Yi (2006)

The questionnaire can be found in Appendix A.

3.9 Pilot study

At the beginning, the questionnaire was tested online with 5 respondents with real-time feedback and immediate corrections were made in the questionnaire. This method was selected in order to simulate filling process with targeted respondents. Unclear or non-logical questions were altered to a more comprehensible form. Despite few mistakes, the pilot respondents did not find any serious complications while filling the form. For instance, questions number 14 and 15 required more detailed description of 'recommended products', a third option was added in question number 10 and supplementary time marks were described in question 5.

3.10 Limitations of Research

Before proceeding to the findings and results of the research, there are various limitations that should be taken into account. Probably the most obvious limitation is acquiring more age various responses. As a student, the author has insignificant number of contacts to people older than 34 years. With more diversified sample, the research could focus more on differences among different age groups and it could describe their expectations in greater detail. This could be compensated by collecting data in person. Yet once more, since author was not present in the Czech Republic this would be hardly achievable.

Internet mediated questionnaires provided quite fast option for data collection with rather satisfactory sample of 176 responses in an eight days period. However, author is aware of the fact, that such sample cannot in no way represent findings applicable to whole Czech Republic. Much higher of respondents would be required for more appropriate results. This

was, nevertheless, according to time limitations representing enormous obstacle and due to author's options rather unfeasible.

Quality of responses is another concert to be taken. Distribution of questionnaire was conducted over the internet and author had no contact with respondents during completion. Moreover, it was done voluntarily. Therefore respondents might face answering in a hurry or would not pay much concentration to detail. This could cause that some answers might not be completed carefully, truthfully or understood properly.

Finally, the information access was another limitation since only little research had been conducted about Czech e-commerce in the past. It is true, that APEK (2013) holds detailed report about Czech online shopping progress over the past few years but it is not freely available. The content is accessible only for APEK private members or purchasable for £650. From economic reasons it was over author's budget.

4 RESULTS OF RESEARCH

In previous chapter a sample, strategy and design and distribution of questionnaire were described together with reasoning for their selection. Generally the explanation was given on *how* the research was conducted and *who* was questioned.

Following chapter is oriented on actual research findings and hypothesis testing. Firstly profile of respondents will be presented, secondly general perception towards personalisation will be defined and finally hypotheses will be tested.

4.1 Profile of respondents

The number of 175 questionnaires was completed. Even though higher sample could provide more accurate findings, it is still considered satisfactory for majority of possible statistical tests.

From all 175 questionnaires 64 were filled by men and remaining 111 were completed by women (see Table 4.1).

	Frequency	Percent
Male	64	37 %
Female	111	63 %
Total	**175**	**100%**

Table 4.1 Gender

Majority of respondents comprises of 137 belonging to the youngest age group (18-24), group (25-34) was stated by 29 respondents, seven respondents belong to age group (35-50) and only 2 of them are 50 and more years old (see chart 4.1).

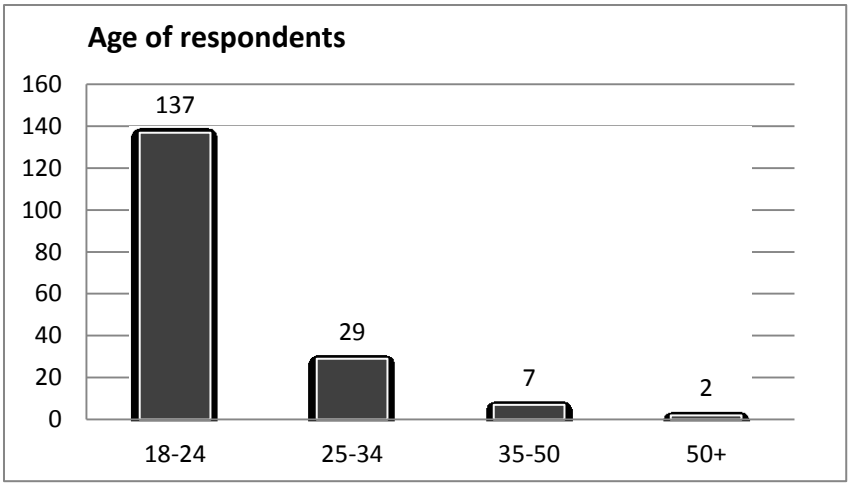


Chart 4.1 Age

Participants were also asked how often they approximately engage with online shopping. Scale from (1-7) was chosen where approximate time labels were used. The most stated answers were several times a year and monthly frequency with 37 responses each. 31 then stated they engage few times a year, 17 approximately once a year, 26 few times a year and only 7 of participants shop weekly (see chart 4.2).

Chart 4.2 Frequency of shopping online

Loyalty is another factor investigated among participants. The most common response was choice of having few favourite e-shops with preference to conduct actual purchase on any e-shop providing better price or conditions. This choice was chosen by 80 respondents meaning 46% of whole sample. Loyalty over several favourite e-shops is relevant to 65 respondents

meaning 37%. However, fully loyal to one favourite e-shop was only 5% represented by 8 participants. 22 respondents then showed no preference over particular e-shops and would purchase in any e-commerce website (see chart 4.3)

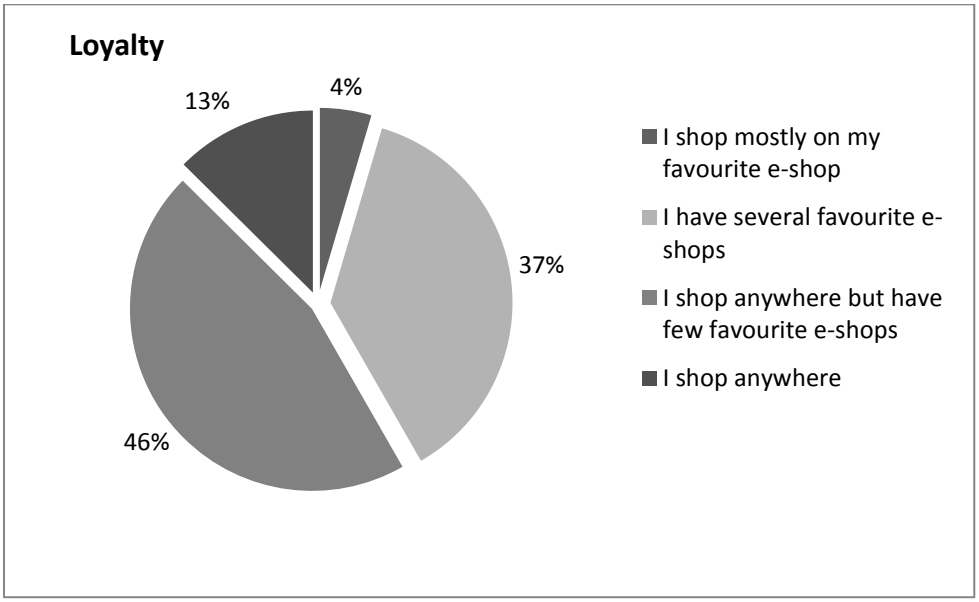


Chart 4.3 Loyalty

The most stated factor leading to loyalty was trust in favoured e-shop affirmed by 95 respondents. High frequency was noticed also with benefit from familiar e-shop interface claimed by 87 participants. As chart 4.4 shows, another factors stated were lowest price affirmed by 72 and reluctance to register on numerous websites by 46. Lowest rate was noticed with option of special personalised offers for loyal customers stated by 38 participants and easier product discovery by 40.

Participants had also chance to state their own option the most common answers were usually reliability, quality of e-shop that have long-time experience, earlier positive experience or variance of goods.

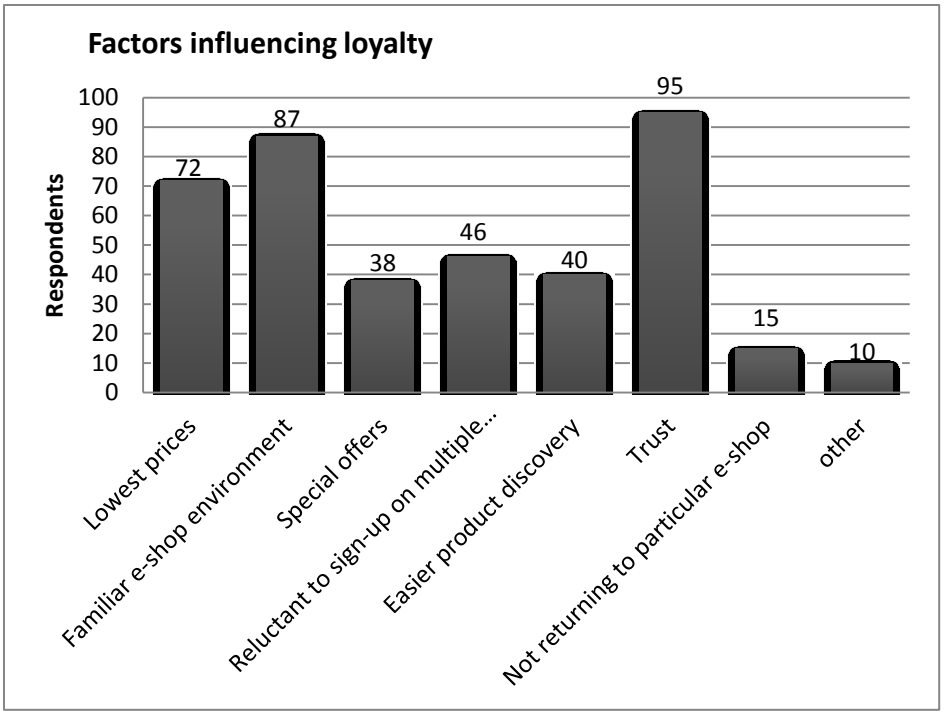


Chart 4.4 Factors influencing loyalty

In this part results for respondents' perception and evaluation of personalisation in e-commerce in Czech Republic is examined.

Firstly we study how respondents are aware of personalisation techniques, in other words how those are noticeable by them. 79 Respondents stated they are aware of personalisation techniques, 59 of them were not and 39 claimed awareness with no further attention given (see chart 4.5).

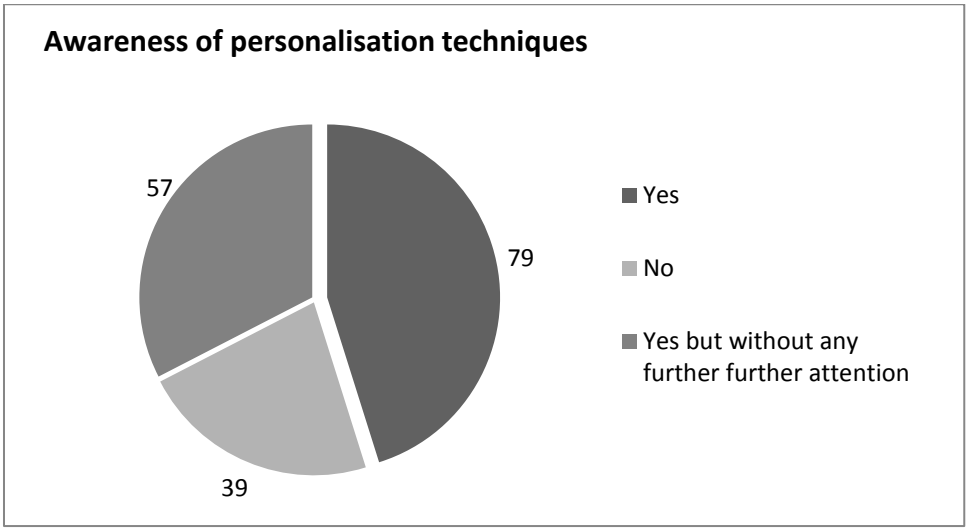


Chart 4.5 Awareness of personalisation techniques

Another aspect to consider is evaluation of personalisation techniques implemented in Czech E-commerce websites. Scale between (1-7) score was offered; 1 meaning very poor and 7 meaning very good. Highest number of 62 stated fair rating which appears in the middle of scale. Lowest rate on the other hand was noted with very good rating by only 1 participant. In the negative half of scale poor rating was appropriate for 28 respondents and rather negative for 45. Positive half of the scale noted 27 thinking of rather positive rank and only 6 stated good.

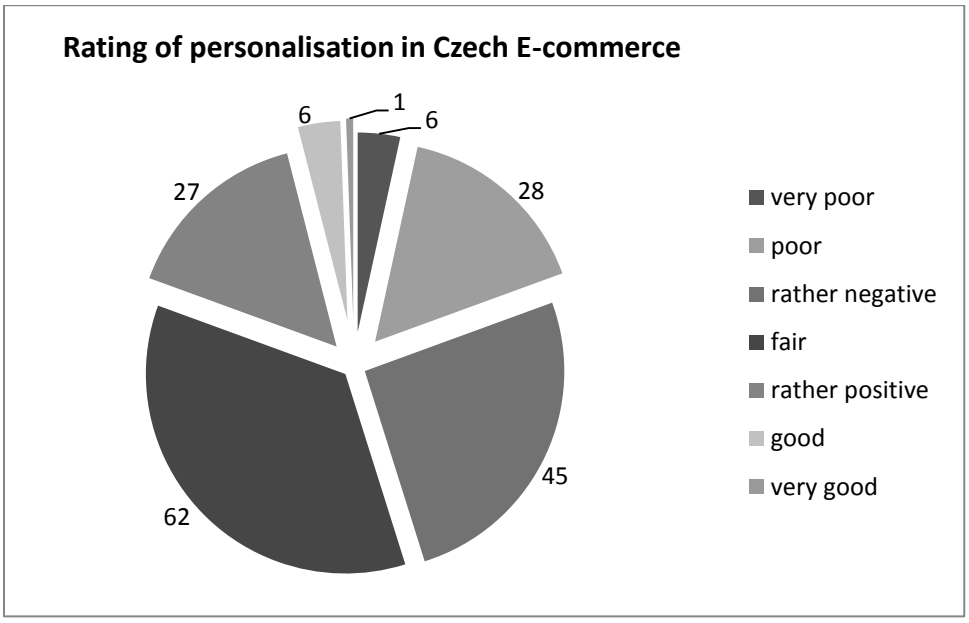


Chart 4.6 Rating of personalisation in Czech E-commerce

Whole scale can be divided into three logical parts by rating: neutral, positive and negative. While rather neutral reflects number 4 with fair label, negative rating would be part of scale from (1-3) and negative would be represented by (5-7) part of scale. Despite rather neutral rating stated by 62, 79 respondents stated rather negative which is comparing to only 34 rather positive ratings more than twice the number of respondents. Overall evaluation shows higher rate of negative ratings than positive ones.

4.2 Analysis of Hypotheses

After defining profile of respondents and describing perception of personalisation in E-commerce for customers in Czech Republic hypotheses can be tested.

Hypothesis 1: Personalisation is more valid for building long-term customer relationship as an instrument for loyalty rather than for acquiring new customers.

We target answers for *importance of personalisation*, claim that *personalised shopping experience could be reason to shop mostly on one online shopping portal* and statement that *personalised shopping could be reason to change user's usually used e-shop.* Each group of variables is labelled as Change, Loyalty and Importance.

Correlations between Importance, Loyalty and Change

		Importance	Loyalty	Change
How important is personalisation for you (importance)	Pearson Correlation	1	**.463****	.146
	Sig. (2-tailed)		.000	.054
	N	175	175	175
Personalisation is enough reason to return to certain e-shop (Loyalty)	Pearson Correlation	.463**	1	**.245****
	Sig. (2-tailed)	.000		.001
	N	175	175	175
Personalisation is enough reason to change e-shop (Change)	Pearson Correlation	.146	.245**	1
	Sig. (2-tailed)	.054	.001	
	N	175	175	175

**. Correlation is significant at the 0.01 level (2-tailed).

Table 4.2 Correlations between Importance, Loyalty and Change

As table 4.2 presents, significant correlation is shown between Importance and Loyalty. However, the same does not apply for Change. Hypothesis was thus supported and second one follows.

Hypothesis 2: Customers who evaluate personalisation higher are more loyal.

In this hypothesis, we aim at variables influencing loyalty. Correlations between the importance of personalisation to customer (Importance), the level of loyalty (Loyalty), the importance of personalisation towards the price (Importance to price) and statement that customer compare the price of recommended products with other e-shops (Price Check) is being examined.

Correlations between importance, loyalty, importance to price and price check

			importance	loyalty	Importance To Price	Price Check
Spearman's rho	importance	Correlation Coefficient	1.000	.008	**.345****	.027
		Sig. (2-tailed)	.	.920	.000	.719
		N	175	175	175	175
	loyalty	Correlation Coefficient	.008	1.000	.131	**-.215****
		Sig. (2-tailed)	.920	.	.085	.004
		N	175	175	175	175
	Importance To Price	Correlation Coefficient	.345**	.131	1.000	**-.167***
		Sig. (2-tailed)	.000	.085	.	.027
		N	175	175	175	175
	Price Check	Correlation Coefficient	.027	-.215**	-.167*	1.000
		Sig. (2-tailed)	.719	.004	.027	.
		N	175	175	175	175

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Table 4.3 Correlations between importance, loyalty, importance to price and price check

Significant level of positive correlation has been found between importance and importance to price. Negative correlations have been found between loyalty and price check and also importance to price and price check.

Hypothesis 3: Personalised shopping experience compensates customer's concerns about privacy caused by tracking shopping process.

We target three aspects: Level of importance participants give to personalisation, labelled as importance, statement that personalisation is enough reason to track their shopping process, labelled as argument to track and claim that tracking of shopping process is reason to worry about customer's privacy, named as reason to worry.

Spearman's Correlation between importance, argument to track and reason to worry

			importance	argument to track	reason to worry
Spearman's rho	importance	Correlation Coefficient	1.000	**.172***	-.038
		Sig. (2-tailed)	.	.023	.619
		N	175	175	175
	argument to track	Correlation Coefficient	.172*	1.000	**.211****
		Sig. (2-tailed)	.023	.	.005
		N	175	175	175
	reason to worry	Correlation Coefficient	-.038	.211**	1.000
		Sig. (2-tailed)	.619	.005	.
		N	175	175	175

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Table 4.4 Spearman's Correlation between importance, argument to track and reason to worry

As we can see in table 4.4, positive correlation between importance and argument to track is present. We can also see even higher correlation between reason to worry and argument to track. Hypothesis was therefore confirmed.

5 DISCUSSION

Discussion about analysis and data findings will be presented in this chapter.

5.1 Hypothesis 1

The first hypothesis concerned with statement, that personalisation is more effective for building long term customer relationship than for acquiring new customers. As mentioned in chapter 2, companies often employ personalisation to maintain long-term relationships with customers because maintaining existing customers is cheaper than acquiring new ones (Thorbjornsen, 2008).

Relationship was found between personalisation being reason to return to particular e-shop and the level that respondents valuated personalisation. Therefore it can be claimed that the higher the importance given to personalisation by customer the higher the reason to be loyal within certain e-shop. The same however does not apply for change of usually used e-shop.

5.1 Hypothesis 2

Second hypothesis focused variables influencing the loyalty from different aspects. Importance of personalisation towards price indicates how customers valuate comfort of personalisation towards price. Negative correlation has been found with statement that respondents compare recommended product's price with other e-shops. In other words the less customer compare price of recommended product with other e-shops the more loyal he or she is. Such behaviour could indicate loyalty because as Herlocker et al. (2004) stated, customer's satisfaction with recommended products should be measured by how many products they actually buy and will not later returned.

Furthermore, negative correlation has been found between Importance of personalisation towards price and comparing price of recommended products with other e-shops. This is logical since the more customers valuate personalisation over price the less they compare price of recommended products towards other e-shops.

On the other hand, no relationship was found between how participants valuate the personalisation and loyalty. Overall, hypothesis cannot be supported nor rejected.

Also, it should not be forgotten to state other aspects gathered in research because personalisation and recommendations can hardly be affirmed as the only reason

for customer's loyalty. The most frequent reason to loyalty was trust stated by 95 participants, followed by benefit of earlier experienced interface stated by 87 respondents. Such findings confirm statement by E. J. Johnson et al. (2003).

5.2 Hypothesis 3

This hypothesis examined statement that if tracking of shopping process is compensated by added value through personalised shopping experience, consumers are more likely to excuse concerns about privacy. This is due to fact that customers value personalisation almost two times more comparing to privacy concerns (Chellappa & Sin, 2005).

Relationship between importance of personalisation and valuating it as a sufficient reason for tracking shopping process was found. This result shows that the higher customers evaluate personalisation the more they might consider it a sufficient reason for their shopping process being tracked. This might be logically explained by the fact that people who evaluate personalisation more are those who also notice it more, consequently meaning that they can also profit more from using such techniques.

Also relationship between claim that tracking of shopping process is reason to be concerned about customer's privacy and personalisation being enough reason to be track have been found. Such correlation implies that the more respondents think tracing of shopping process is a reason to worry about privacy, the more they can compensate this by benefits of implemented personalised value.

6 CONCLUSION

The aim of the work was to analyse perception of personalised content for customers in Czech Republic and find out whether research results differ from key findings in different markets. Firstly e-commerce was presented as enabler and facilitator for implementation of one-to-one marketing through personalised content delivery. Also development that led to personalisation as a reflection of one-to-one approach was highlighted. Moreover different techniques for personalisation were described.

In the research part the aim was to analyse customers' perception for personalisation in Czech Republic. Primary data were collected through questionnaires and further analysis was applied using statistical methods so the hypotheses could have been either supported or proven false.

Three hypotheses were tested:

- Personalisation is more valid for building long-term customer relationship as an instrument for loyalty rather than for acquiring new customers
- Customers who evaluate personalisation higher are more loyal.
- Personalised shopping experience compensates customer's concerns about privacy caused by tracking shopping process.

The first hypothesis was proven right when stronger relationship was shown between the level how customers valuate personalisation and the state of loyalty comparing to relationship between valuation of personalisation and willingness to change usually used e-shop.

The second hypothesis was neither supported nor rejected.

The third hypothesis was supported. Personalised shopping experience can compensates customer's concerns about privacy caused by tracking of shopping process.

The author of this dissertation would like to outline the fact that there are several limitations of the analysis. Firstly, some hypothesis would be more accurate if those were tested by practical measures like observation of specific implementations.

Secondly, considering amount of active customers within the Czech online commerce, the size of the sample is limited and could also be more diversified. This is especially due to author's restricted resources.

6.1 Application of the work in practice

Author is aware of the fact that rationale of the work is mainly theoretical. However, since theory can and often should precede any practical implementation, potential application into practice will be mentioned below.

As previously mentioned, amount of information within the topic of Czech e-commerce is partly limited. Within an area of personalised content, the paper can serve as introduction to problem of tailored online shopping. Since implementation of personalised techniques is frequently resources demanding, a potential reader might use the findings as supporting information for decision whether implement tailored experience.

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ABBREVIATIONS

APEK ..... Association for electronic commerce (CZ)
B2B ..... business-to-business
B2C ..... business-to-customer
C2B ..... customer-to-business
C2C..... customer-to-customer
EB..... electronic business
EC..... electronic commerce
e ..... electronic
EMH ..... Electronic Market Hypothesis
IBM ..... The International Business Machines Corporation
ICT ..... Information and communication technologies
IT ..... information technology
PPR..... personalised product recommendation
RS ..... Recommender system

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